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SHORTER ARTICLES AND DISCUSSIONS

NOTE ON A CASE OF HUMAN INBREEDING¹

THROUGH the kindness of a friend the following pedigree is presented. It is that of a family of English stock, which has been in this country since the early eighteenth century, and during that time has been one of the principal families of a rural community.

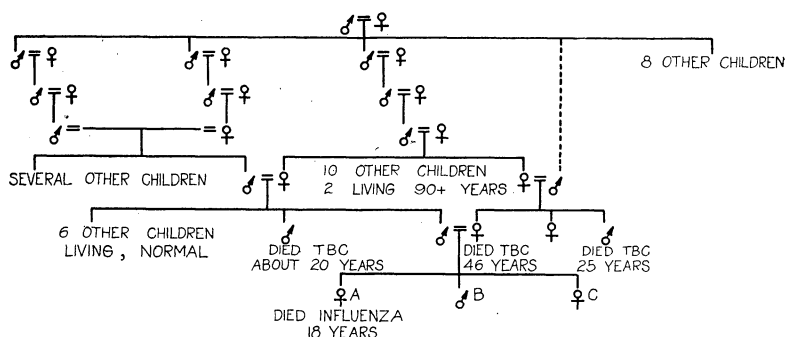


FIG. 1. Pedigree of an inbred family.

To quote from my correspondent's letter, "A was a fine young girl. She had graduated from high school but did not go to college as her mother had died in the summer and she wished to take charge of the home. B is about 16 years old. A splendid young man, bright and apparently healthy. He is in school standing about average. C is 10 years old or thereabouts. An exceptionally bright child and one that is very much alive and full of spirit."

Assuming that the line of descent represented in the figure by a broken line, indicating that the number of generations is not known, includes the same number of generations as the other lines the coefficients of inbreeding² for the children in the last

¹ Papers from the Department of Biometry and Vital Statistics, School of Hygiene and Public Health, Johns Hopkins University. No. 41.

² Pearl, "Studies on Inbreeding," I-VIII, AMERICAN NATURALIST, 1913-17.

generation (viz., A, B, and C) are as follows:

$$\begin{array}{ll} Z_1 = 0, & Z_4 = 25, \\ Z_2 = 25, & Z_5 = 34.37, \\ Z_3 = 25, & Z_{T_5} = 27.1, \end{array}$$

i.e., in five generations of ancestry the inbreeding is about a quarter of the possible maximum.

There is no deleterious effect of inbreeding apparent in this pedigree. The three children in the last generation, the most inbred of any, show no signs of abnormality. In their father's fraternity, for which $Z_1 = Z_2 = Z_3 = 0$; $Z_4 = 12.5$; $Z_{T_4} = 4.1$, or in four generations of ancestry there is $\frac{1}{25}$ of the possible maximum inbreeding, one of eight died of tuberculosis; the other seven have attained adult age. In the mother's fraternity, for which $Z_1 = Z_2 = Z_3 = 0$; $Z_4 = 6.25$; $Z_{T_4} = 2.0$, two out of the three have died of tuberculosis. The least inbred, therefore, show the greatest susceptibility to tuberculosis. The numbers are, of course, too small to draw any certain inference, but so far as they go, they accord best with the view that there is no harmful effect of inbreeding per se.

JOHN RICE MINER

ON COLOR VARIATIONS IN CHITONS

THE question was raised by Bateson ("Materials," 1894, p. 307) as to whether variation occurring in serial parts whose repetition is not strictly speaking of a metameric sort, would be found to simultaneously affect each of the parts involved in such a series. With this point in mind he examined a collection of chitons, the 8 shell plates of these animals providing an excellent opportunity for such observations. He found color variations affecting all the plates of an individual to be of rather rare occurrence, but that plates 2, 4 and 7 seemed, on the other hand, to exhibit a decided tendency to vary together (in several species of *Chiton*).

Although the problem of metamerism, so far as it concerns variation, has perhaps lost some of its original attractiveness, I have thought it worth while to point out that in *Chaetopleura* several curious types of shell variation are apparent, involving either simultaneous variation throughout the series or variation in a single shell-valve alone, or both.